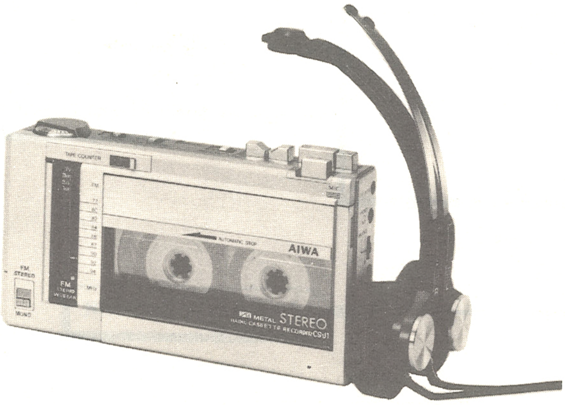
FM STEREO RADIO CASSETTE TAPE RECORDER

MODEL NO. CS-J1 Y, YU, YG

AIWA®

[SERVICE MANUAL]

Code No. 29-100-000-01



DATE OF ISSUE 4/1981

SPECIFICATIONS

GENERAL

Semiconductors:	4 ICs, 1 FET, 18 transistors 8 diodes, 2 LED's
Power source:	Batteries DC 4.5V (UM-3 x 3) Household AC power (thru AC adaptor)
Dimensions:	155.5(W) x 81(H) x 29.9(D)mm [6-1/8" x 3-1/8" x 1-1/8"]
Weight:	430g (0.951 lbs.)

< Radio section >

Circuit:	Superheterodyne
Frequency range:	FM 87.4 ~ 108.3 MHz
Intermediate frequency:	FM 10.7 MHz
Sensitivity: (IHF, THD 3%)	FM 0 ± 4 dB (at 88 MHz) −1 ± 4 dB (at 96 MHz) 2 ± 4 dB (at 108 MHz)
Image rejection:	FM 24 ± 4 dB (at 88 MHz)
IF rejection:	FM 75 ± 6 dB (at 88 MHz)

< Tape recorder section >

Track type:	4 tracks, 2 channel
Recording system:	AC bias
Erasing system:	MAGNET erase
Tape speed:	4.8 cm/s (1-7/8 ips)
Record bias frequency:	59 kHz
Signal to noise ratio: (Unweighted)	More than 44/43 dB (PB) More than 32/31 dB (REC/PB)
Frequency response:	40 ~ 12,500 Hz (NORMAL) 40 ~ 16,000 Hz (METAL)
Output power:	28.5 mW + 28.5 mW
Erasing ratio:	60 ± 5 dB (1 kHz)
Distortion:	Less than 2% (PB) Less than 8% (RE/PB)
Motor:	DC electrical governor motor
Wow & flutter:	Less than 0.2% (WRMS) Less than 0.37% (RMS)
Auto stop system:	Mechanical full auto
Auto stop action time:	5^{+3}_{-5} s. (at PLAY/REC)
Pinch roller pressure:	220 ± 30 g (2.16 ± 0.29 N)
Take-up torque:	40 ± 5 g-cm (0.39 ± 0.05 mN·m)
FF torque:	More than 70 g-cm (0.67 mN·m)
Rewind torque:	More than 70 g-cm (0.67 mN·m)
Rewind, FF time:	110 ± 20 s.
Input:	MIC/AUX 3.5ϕ jack
Max. input sensitivity:	MIC 0.3 mV/3.3 kΩ AUX 150 mV/1kΩ
Output:	Headphone jack (3.5ϕ)
Battery life under continuous use:	Recording—approximately 8 hours (EIAJ) with alkaline batteries Recording—approximately 3 hours (EIAJ) with AIWA EXTRA Batteries

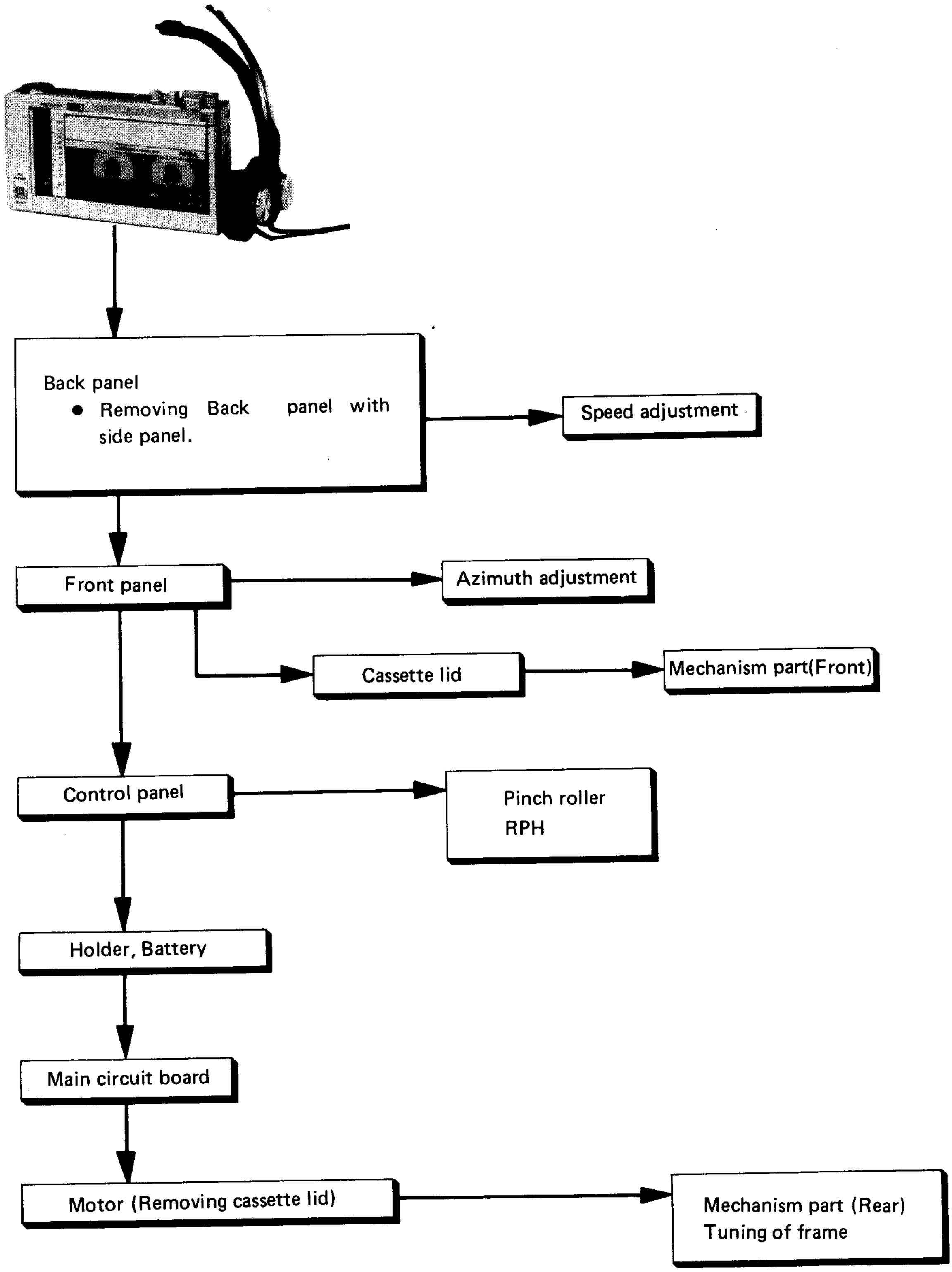
< Headphone section >

Type:	Dynamic type
Impedance:	28 ohms
Frequency response:	20 ~ 20,000 Hz
Sensitivity:	100 dB/mW
Maximum input:	100 mW
Cord length:	1.4 meter
Weight:	40 g (without cord)

- The specifications and external appearance of this set are subject to change without prior notice.

DISASSEMBLING CHART DIAGRAM OF MAIN PARTS

- To avoid troubles when disassembling or replacing the main parts, follow the chart diagram as below.


Back panel
● Removing Back panel with side panel.
Speed adjustment
Front panel
Azimuth adjustment
Cassette lid
Mechanism part(Front)
Control panel
Pinch roller
RPH
Holder, Battery
Main circuit board
Motor (Removing cassette lid)
Mechanism part (Rear)
Tuning of frame

To disassemble the main parts

1. Back panel

Remove the 5 screws. (See figure I)

2. Front panel

Remove the 2 screws. (See figure I)

3. Operation panel

Remove 3 screws.
With 3 screws removed, the operation panel, switch panel and slide knob can be detached simultaneously. Be careful not to lose them. (See figure 1)

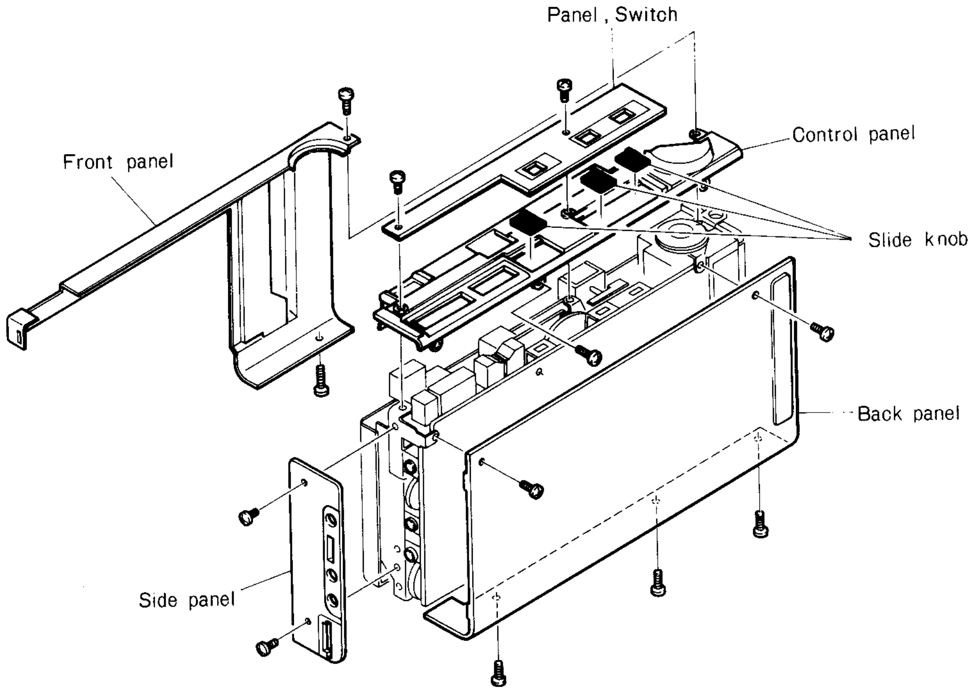

Panel , Switch
Front panel
Control panel
Slide knob
Back panel
Side panel

Fig. 1

4. Cassette lid

Remove the spring and then remove 1 screw. (See figure 2)

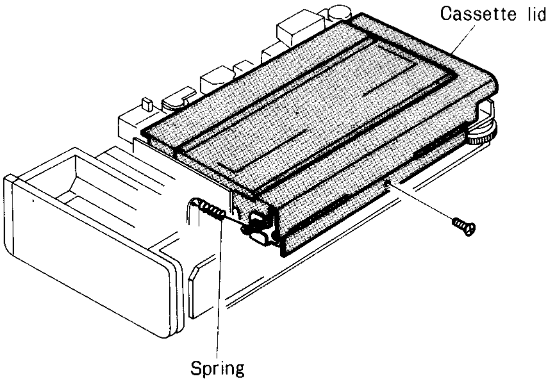

Cassette lid
Spring

Fig. 2

5. Battery holder

Remove 2 screws and move the holder in the direction of the arrow (See figure 3)

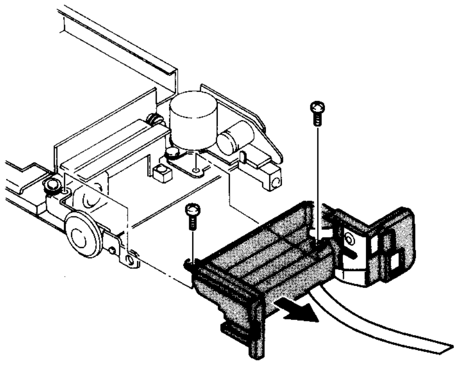


Fig. 3

6. Main PC Board

Unsolder wires (red, white, black, green, grey).

Note: Be sure to remove the wires on the PC Board side because the terminals on the PC Board are not heat-resistant.
Remove 5 screws (See figure 4)

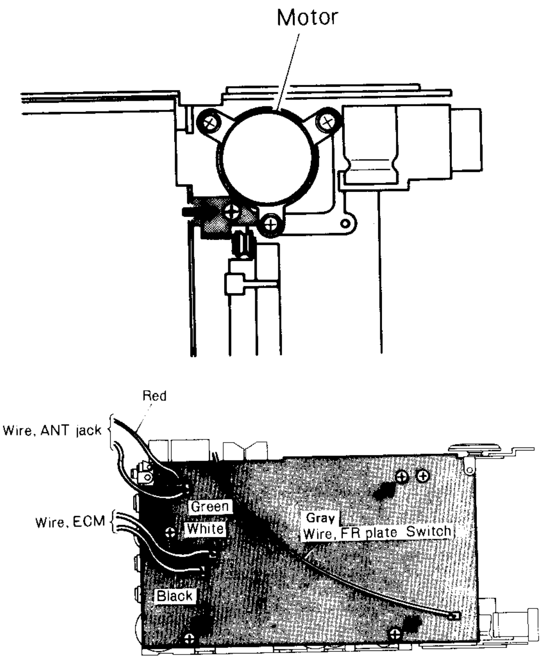

Motor
Red
Wire, ANT jack
Green
Wire, ECM
White
Gray
Wire, FR plate Switch
Black

Fig. 4

7. Tuning frame

Remove 3 screws and lift the tuning frame in the direction of the arrow
A mylar sheet is fixed to the tuning frame to prevent other parts from touching it. Check that the mylar sheet is present when re-assembling the tuning frame. (See figure 5)

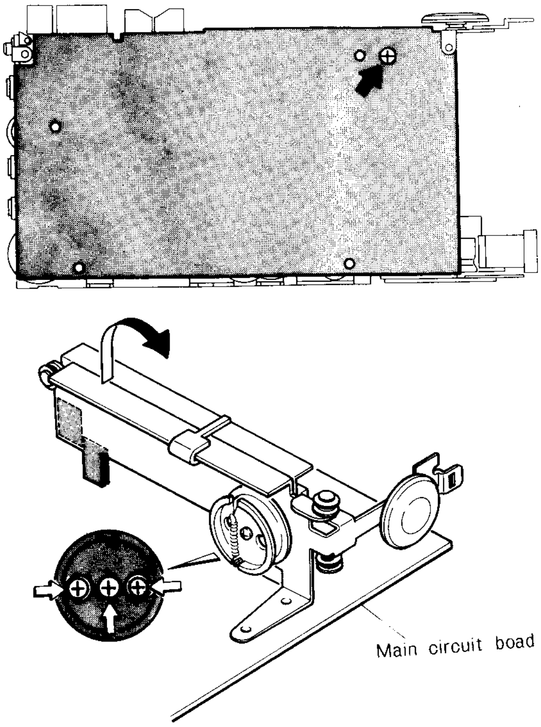
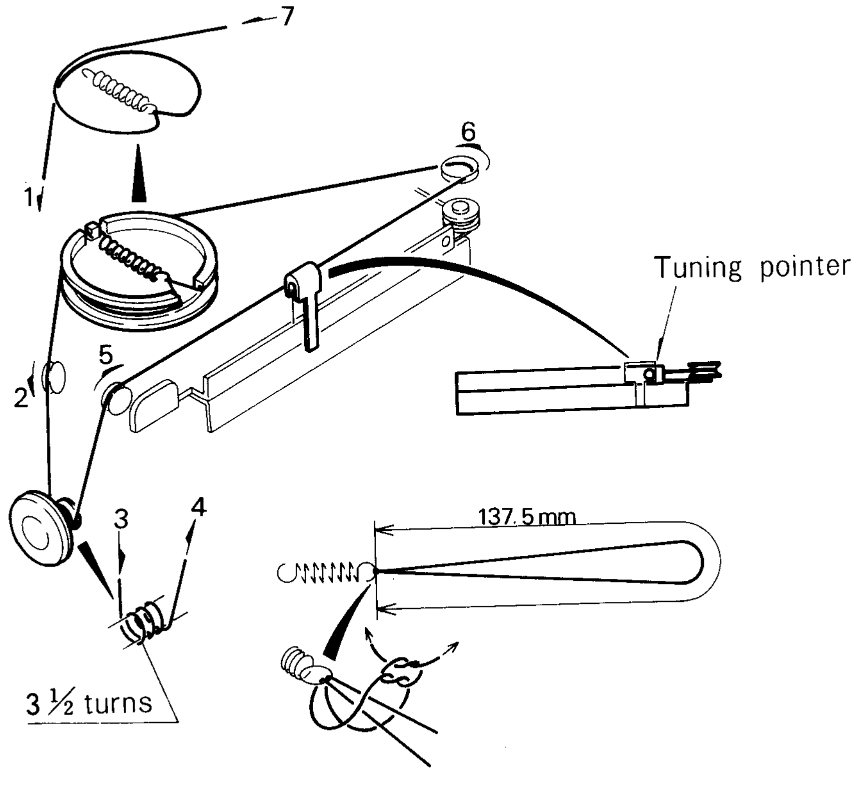
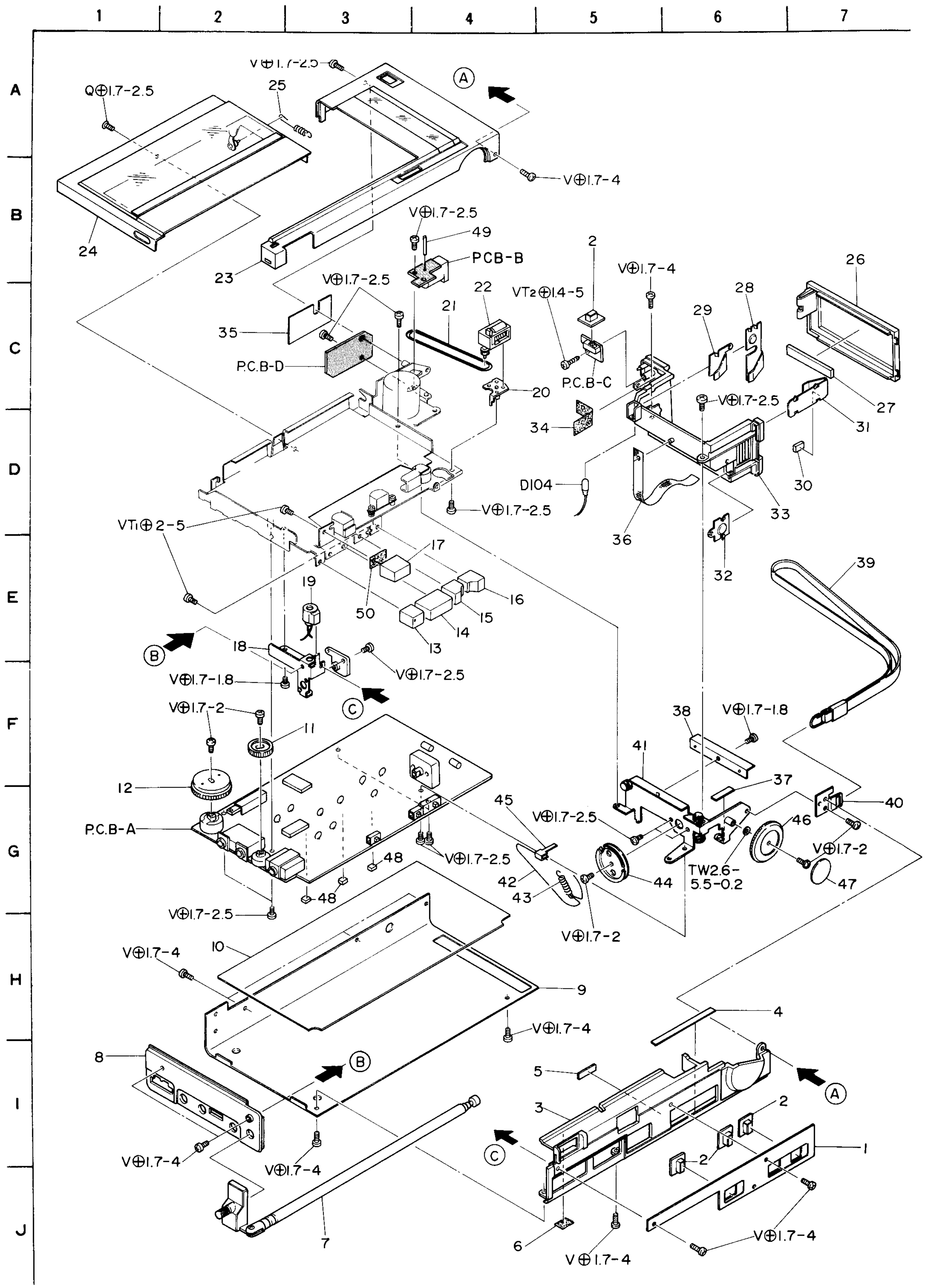

Main circuit boad

Fig. 5

DIAL CORD STRINGING


7
1
6
Tuning pointer
2
5
3
4
137.5 mm
3 ½ turns

EXPLODED VIEW–1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V⊕1.7-2.5
Q⊕1.7-2.5
25
Ⓐ
V⊕1.7-4
24
23
V⊕1.7-2.5
49
PCB-B
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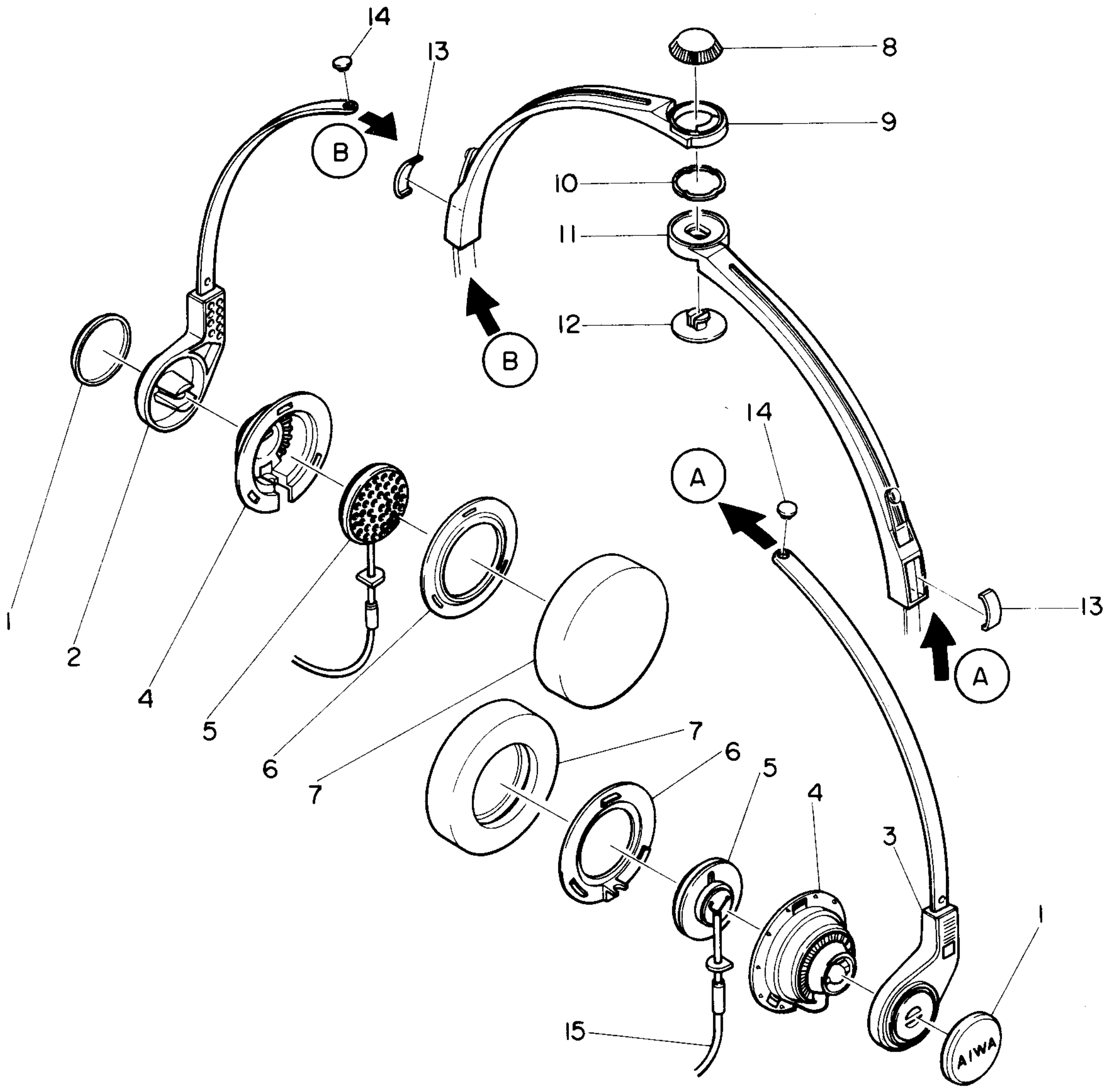
V⊕1.7-4
26
V⊕1.7-2.5
22
VT2⊕1.4-5
28
35
21
29
P.C.B-D
20
P.C.B-C
V⊕1.7-2.5
27
34
31
D104
V⊕1.7-2.5
30
33
VTi⊕2-5
36
17
32
39
19
50
16
15
14
13
Ⓑ
18
V⊕1.7-2.5
V⊕1.7-1.8
Ⓒ
V⊕1.7-2
38
V⊕1.7-1.8
11
41
12
37
45
40
P.C.B-A
V⊕1.7-2.5
46
V⊕1.7-2
48
V⊕1.7-2.5
42
TW2.6-5.5-0.2
43
44
47
48
V⊕1.7-2.5
V⊕1.7-2
V⊕1.7-4
10
9
4
V⊕1.7-4
8
Ⓑ
5
Ⓐ
3
2
1
Ⓒ
2
V⊕1.7-4
V⊕1.7-4
V⊕1.7-4
7
6
V⊕1.7-4

PARTS LIST

MECHANICAL PARTS

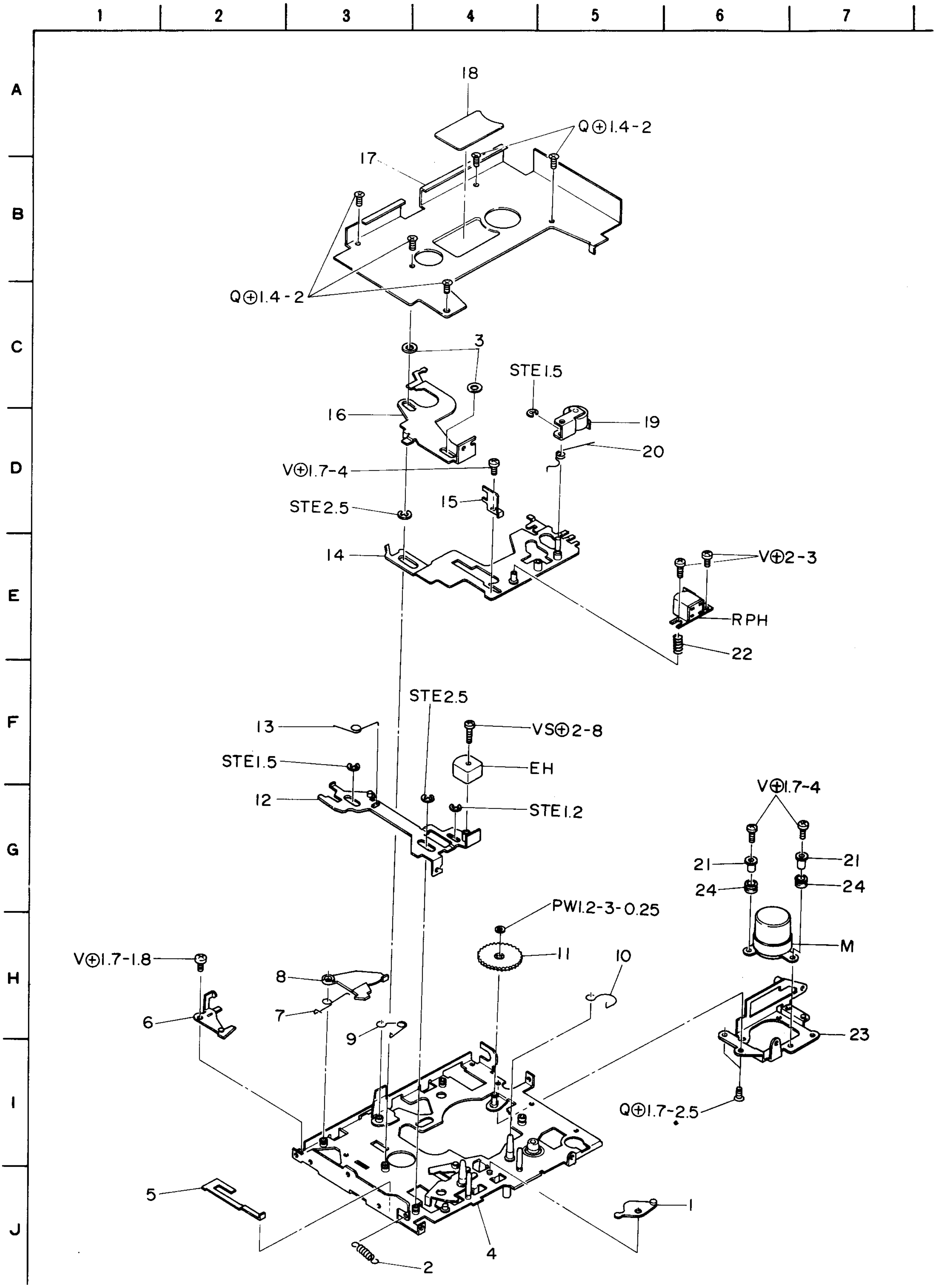
■ * mark in this part list shows exclusive part.

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1-1	82-590-017-01		Panel S, Switch	*	1
1-2	82-590-012-01		Slide knob	*	4
1-3	82-590-006-01		Control panel S	*	1
1-4	82-641-230-01		Mylar sheet C		1
1-5	82-639-428-01		Rubber sheet 12-3-1		1
1-6	82-590-247-01		Himeron cloth 7 x 10 x 0.5	*	1
1-7	09-017-825-01		Antenna ass'y	*	1
	82-590-024-01		Cover, Antenna	*	1
	82-590-016-01		Screw, Antenna stopper	*	1
	87-043-056-01		Whip antenna		1
	82-590-137-01		Mylar sheet 9-15	*	1
1-8	82-590-007-01		Side panel S	*	1
1-9	82-590-592-01		Back panel S	*	1
1-10	82-590-234-01		Mylar sheet	*	1
1-11	82-641-020-01		Knob, BALANCE		1
1-12	82-641-010-01		Knob, VOLUME		1
1-13	82-641-006-01		Push-button, REC		1
1-14	82-641-007-01		Push-button, FWD		1
1-15	82-641-019-01		Push-button, REW		1
1-16	82-641-009-01		Push-button, FF		1
1-17	82-641-008-01		Push-button, STOP		1
1-18	82-590-220-01		Bracket, ECM	*	1
1-19	82-641-210-01		Holder, ECM		1
1-20	82-590-213-01		Counter holder ass'y	*	1
1-21	82-641-214-01		Belt, Counter		1
1-22	87-040-144-01		Counter		1
1-23	09-017-833-01		Front panel ass'y	*	1
	82-590-051-01		Front panel	*	1
	82-590-053-01		Dial, Window	*	1
	82-590-020-01		Decorated plate	*	1
	82-590-233-01		Adhesive paper 7-60	*	1
	82-590-239-01		L-metal fitting	*	1
1-24	09-017-824-01		Cassette lid ass'y	*	1
	82-590-003-01		Cassette lid S ass'y	*	1
	82-590-019-01		Name plate	*	1
	82-590-232-01		Adhesive paper 9-98	*	1
	82-590-231-01		Cassette window, Adhesive paper	*	1
	82-590-010-01		Cassette window (Blue)	*	1
1-25	82-641-204-01		E-spring, Cassette lid		1
1-26	82-590-009-01		Battery room lid S	*	1
1-27	82-575-283-01		M cushion 30-8-3		1
1-28	82-636-601-01		Terminal plate, Battery		1
1-29	82-299-702-01		Terminal plate (–)		1
1-30	82-445-253-01		Rubber A, Carrying handle		1
1-31	82-590-230-01		Terminal plate, Battery	*	1
1-32	82-299-701-01		Terminal plate (+)		1
1-33	82-590-008-01		Holder S, Battery	*	1
1-34	82-590-238-01		Himeron cloth, Blind	*	1
1-35	82-590-235-01		Mylar sheet 20-35	*	1
1-36	82-590-236-01		Ribbon, Battery	*	1
1-37	82-641-228-01		Nylon sheet 12-3-0.3		1
1-38	82-590-022-01		Dial plate (Blue)	*	1
1-39	82-641-956-01		Strap ass'y		1
1-40	82-590-025-01		Holder, Strap	*	1
1-41	82-590-225-01		Tuning frame ass'y	*	1
1-42	87-096-086-01		Dial string 0.4ϕ		1
1-43	82-590-229-01		E-spring, Tuning	*	1
1-44	82-590-228-01		Drum, Tuning	*	1
1-45	82-590-021-01		Tuning pointer	*	1
1-46	82-590-015-01		Tuning knob	*	1
1-47	87-590-018-01		Plate knob 13	*	1
1-48	82-575-320-01		G cushion 3-3-2.5		3
1-49	87-033-170-01		Pin, 1-11		1



Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
1	86-388-015-01		Cap		2	
2	86-388-010-01		Hanger L ass'y		1	
3	86-388-011-01		Hanger R ass'y		1	
4	86-388-012-01		Housing A		2	
5	86-384-010-01		Driver unit		2	
6	86-388-016-01		Housing B		2	
7	86-388-018-01		Pad, Ear		2	
8	86-388-021-01		Stopper A		1	
9	86-388-013-01		Head band L		1	
10	86-388-020-01		Spring		1	
11	86-388-014-01		Head band R		1	
12	86-388-022-01		Stopper B		1	
13	86-388-019-01		Slide spring		2	
14	86-384-020-01		Slide stopper		2	
15	86-388-023-01		3.5ϕ cord ass'y		1	

EXPLODED VIEW–2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Q⊕1.4-2
17
Q⊕1.4-2
3
STE1.5
16
19
20
V⊕1.7-4
STE2.5
15
14
V⊕2-3
RPH
22
STE2.5
13
VS⊕2-8
STE1.5
EH
12
STE1.2
V⊕1.7-4
21
21
24
24
PW1.2-3-0.25
M
11
10
V⊕1.7-1.8
8
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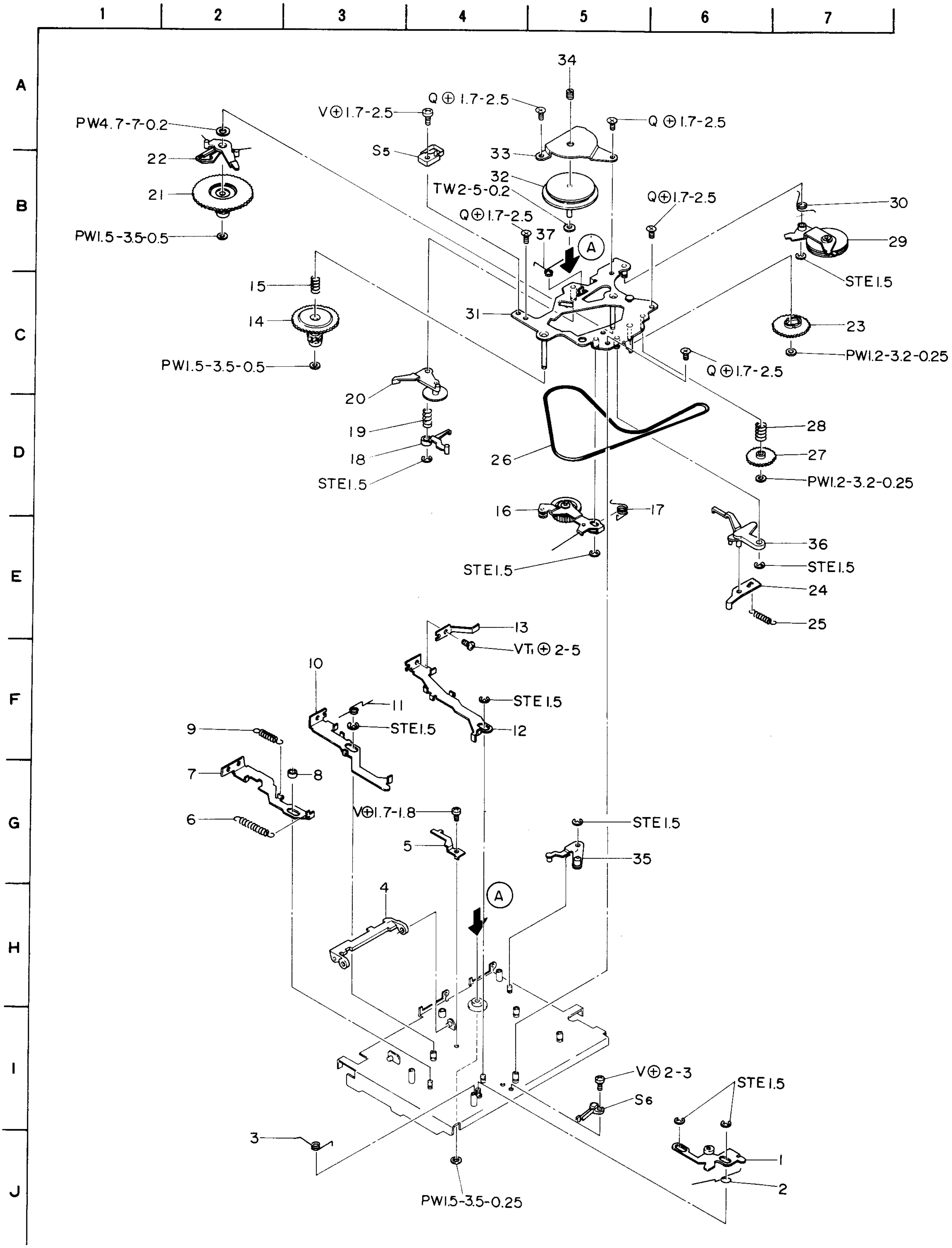
9
23
Q⊕1.7-2.5
5
1
4
2

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
2-1	82-639-232-01		Arm actuating chassis B ass'y		1	
2-2	82-639-396-01		E-spring, Eject		1	
2-3	82-639-430-01		Washer, STOP lever		2	
2-4	82-639-201-01		Chassis ass'y		1	
2-5	82-639-252-01		Cam, Eject		1	
2-6	82-639-378-01		Arm REC blocking ass'y		1	
2-7	82-639-261-01		T-spring, REC lock		1	
2-8	82-590-219-01		Arm, REC lock	*	1	
2-9	82-639-251-01		T-spring, STOP lever		1	
2-10	82-639-419-01		T-spring, Moving chassis		1	
2-11	82-639-283-01		Gear, Counter		1	
2-12	82-639-245-01		Lever, REC ass'y		1	
2-13	82-639-246-01		T-spring, REC lever		1	
2-14	82-639-411-01		Actuating chassis ass'y		1	
2-15	82-639-405-01		Guide, Tape		1	
2-16	82-639-250-01		Lever, STOP		1	
2-17	82-590-023-01		Panel, Blind (Blue)	*	1	
2-18	82-641-017-01		Label, Tape indication		1	
2-19	82-639-281-01		Pinch lever ass'y		1	
2-20	82-639-413-01		T-spring, Pinch lever		1	
2-21	82-636-260-01		Collar, Motor		3	
2-22	82-639-466-01		C-spring, Head		1	
2-23	82-590-215-01		Motor holder ass'y	*	1	
2-24	82-636-254-01		Rubber cushion		3	

EXPLODED VIEW–3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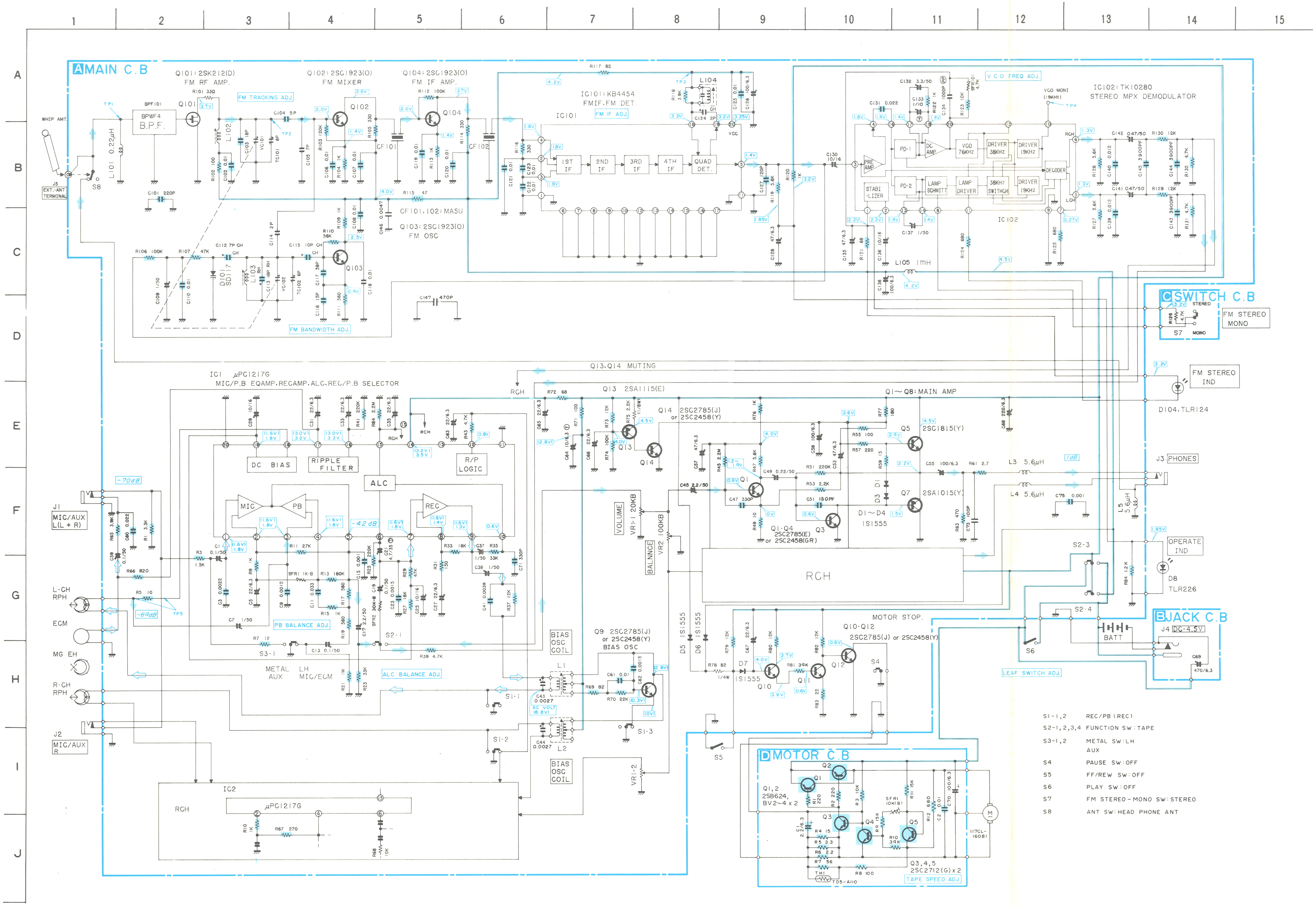
34
Q ⊕ 1.7-2.5
V⊕1.7-2.5
Q ⊕ 1.7-2.5
PW4.7-7-0.2
22
S5
33
21
32
TW2-5-0.2
Q⊕1.7-2.5
30
Q⊕1.7-2.5
PW1.5-3.5-0.5
37
A
29
STE1.5
15
31
14
23
PW1.5-3.5-0.5
PW1.2-3.2-0.25
Q ⊕ 1.7-2.5
20
28
19
18
26
27
STE1.5
PW1.2-3.2-0.25
16
17
36
STE1.5
STE1.5
24
25
13
VT₁ ⊕ 2-5
10
STE 1.5
11
9
STE1.5
12
7
8
V⊕1.7-1.8
STE1.5
6
5
35
4
A
V⊕ 2-3
STE1.5
S6
3
1
2
PW1.5-3.5-0.25

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
3-1	82-639-273-01		Brake ass'y		1
3-2	82-639-262-01		T-spring, Eject arm		1
3-3	82-639-427-01		T-spring, REC B		1
3-4	82-639-270-01		Lock plate button		1
3-5	82-639-271-01		P-spring, Lock plate		1
3-6	82-639-243-01		E-spring, Play lever		1
3-7	82-639-242-01		Play lever		1
3-8	82-639-276-01		Roller, Brake		1
3-9	82-639-244-01		E-spring, Actuating chassis		1
3-10	82-639-240-01		Lever, REW		1
3-11	82-639-241-01		T-spring, FF/REW lever		1
3-12	82-639-238-01		Lever, FF		1
3-13	82-639-239-01		P-spring, FF lever		1
14~31	**82-590-211-11**		**Bottom plate ass'y**		**1**
3-14	82-639-325-01		Supply reel ass'y		1
3-15	82-639-375-01		C-spring, Back tension		1
3-16	82-639-340-01		Arm, REW gear ass'y		1
3-17	82-639-345-01		T-spring, REW gear		1
3-18	82-639-354-01		Arm, Sensor eject		1
3-19	82-639-442-01		C-spring, Auto eject		1
3-20	82-639-349-01		FF gear ass'y		1
3-21	82-639-313-01		Take-up reel ass'y		1
3-22	82-639-390-01		Sensor ass'y		1
3-23	82-639-360-01		Cam, Auto-stop		1
3-24	82-639-357-01		Arm, Eject gear		1
3-25	82-639-358-01		E-spring, Eject gear		1
3-26	82-590-212-01		Rubber belt	*	1
3-27	82-639-359-01		Gear, Auto-stop		1
3-28	82-639-421-01		C-spring, Cam auto gear		1
3-29	82-639-330-01		Take-up ass'y		1
3-30	82-639-339-01		T-sprung, Arm take-up		1
3-31	82-639-300-01		Bottom plate semi ass'y		1
3-32	82-639-289-01		Flywheel ass'y		1
3-33	82-639-287-01		Plate, Flywheel		1
3-34	82-639-361-01		Adjust screw		1
3-35	82-639-267-01		Take-up lever ass'y		1
3-36	82-639-356-01		Arm, Sensor		1
3-37	82-639-441-01		T-spring, FF gear A		1

ACCESSORIES / PACKAGE

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1	82-590-856-01		Printed indiv., Packing Y	*	1
2	82-590-861-01		Sheet Y, Auxiliary cushion	*	1
3	82-590-858-01		Cushion, Printed indiv.	*	1
4	87-051-131-11		Poly-vinyl sack		1
5	87-051-136-11		Poly-vinyl sack		1
6	82-590-904-01		Instructions bookelt	*	1
7	87-051-136-11		Poly-vinyl sack		1
8	87-056-009-41		Distributors list (Y,YG model only)		1
9	87-056-045-01		Guarantee card U (YU model only)		1
10	87-056-057-01		Service station list (YU model only)		1
11	87-056-059-01		Guarantee card G (YG model only)		1
12	82-590-952-01		Carrying case EX	*	1
13	82-590-953-01		Band holder	*	1
14	82-641-956-01		Strap ass'y		1
15	82-916-730-01		Tape cassette DMC-163		1
16	86-388-001-01		Headphone HP-M5K		1
17	09-017-825-01		Antenna ass'y	*	1

SCHEMATIC DIAGRAM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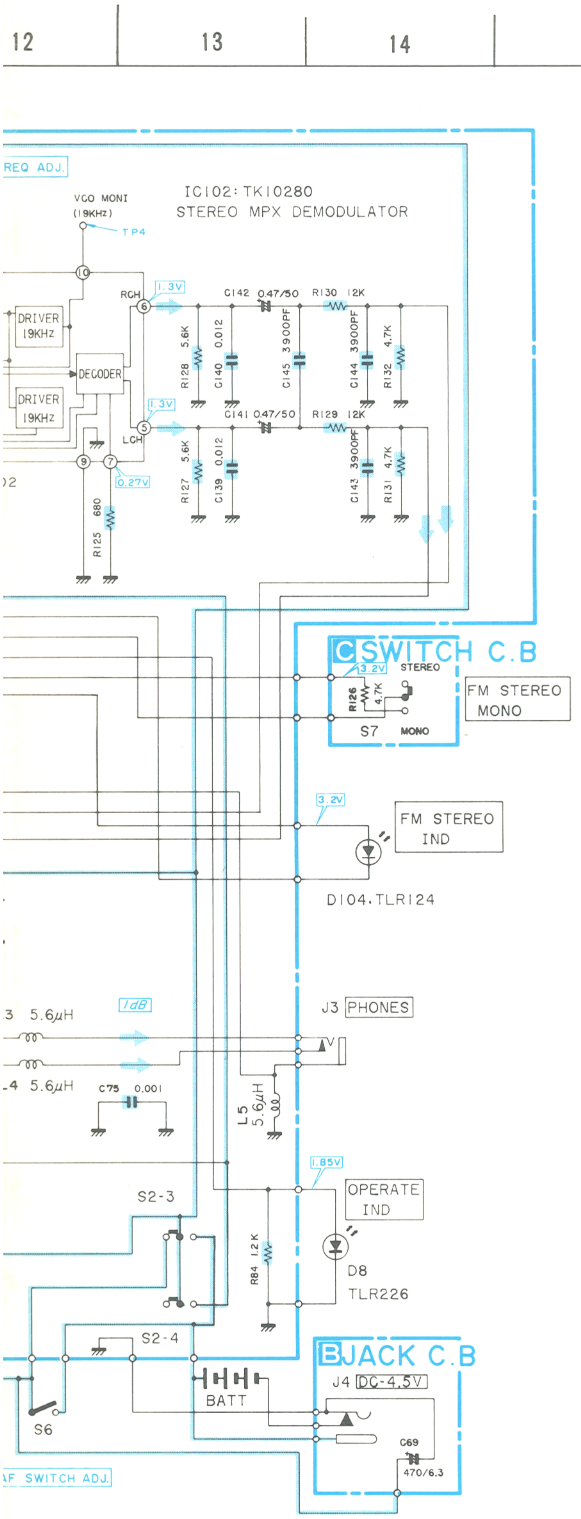
J
A MAIN C.B
Q101: 2SK212(D) FM RF AMP.
Q102: 2SC1923(O) FM MIXER
Q104: 2SC1923(O) FM IF AMP.
IC101: KB4454 FMIF, FM DET.
IC102: TK10280 STEREO MPX DEMODULATOR
CF101, 102: MA5U
Q103: 2SC1923(O) FM OSC
WHIP ANT
J5 EXT. ANT TERMINAL
S8
BPF101 BPWF4 B.P.F.
FM TRACKING ADJ
FM IF ADJ
FM BANDWIDTH ADJ
V.C.O FREQ ADJ
VCO MONI (19KHz)
1ST IF
2ND IF
3RD IF
4TH IF
QUAD DET.
PRE AMP
PD-1
PD-2
DC AMP
VCO 76KHz
DRIVER 38KHz
DRIVER 19KHz
DECODER
STABI-LIZER
LAMP SCHMITT
LAMP DRIVER
38KHz SWITCH
L105 1mH
C SWITCH C.B
S7 STEREO MONO
FM STEREO MONO
FM STEREO IND
D104: TLR124
Q13, Q14 MUTING
IC1 μPC1217G MIC/P.B EQAMP, RECAMP, ALC, REC/P.B SELECTOR
DC BIAS
RIPPLE FILTER
R/P LOGIC
ALC
MIC
PB
REC
-70dB
-42dB
-69dB
J1 MIC/AUX L(L+R)
L-CH RPH
ECM
MG EH
R-CH RPH
J2 MIC/AUX R
PB BALANCE ADJ
ALC BALANCE ADJ
METAL AUX
LH MIC/ECM
S3-1
S2-1
S1-1
S1-2
S1-3
BIAS OSC COIL
L1
L2
AC VOLT
Q9 2SC2785(J) or 2SC2458(Y) BIAS OSC
Q13 2SA1115(E)
Q14 2SC2785(J) or 2SC2458(Y)
Q1~Q8: MAIN AMP
Q5 2SC1815(Y)
Q7 2SA1015(Y)
Q1~Q4 2SC2785(E) or 2SC2458(GR)
D1~D4 1S1555
L3 5.6μH
L4 5.6μH
L5 5.6μH
J3 PHONES
VOLUME VR1-1 20KB
BALNNCE VR2 100KB
RCH
S2-3
S2-4
OPERATE IND
D8 TLR226
B JACK C.B
J4 DC-4.5V
BATT
S6
LEAF SWITCH ADJ
MOTOR STOP
Q10-Q12 2SC2785(J) or 2SC2458(Y)
D5 1S1555
D6 1S1555
D7 1S1555
S4
S5
VR1-2
IC2 μPC1217G
D MOTOR C.B
Q1, 2 2SB624, BV2~4 x 2
Q3, 4, 5 2SC2712(G) x 2
SFR1 10K(B)
TH1 TD5-A110
TAPE SPEED ADJ
M (17CL-1608)

S1-1, 2	REC/PB (REC)
S2-1, 2, 3, 4	FUNCTION SW: TAPE
S3-1, 2	METAL SW: LH AUX
S4	PAUSE SW: OFF
S5	FF/REW SW: OFF
S6	PLAY SW: OFF
S7	FM STEREO-MONO SW: STEREO
S8	ANT SW: HEAD PHONE ANT


12
13
14
15
16
17
18
19
REQ ADJ.
VCO MONI
(19KHz)
TP4
IC102: TK10280
STEREO MPX DEMODULATOR
10
RCH
6
1.3V
DRIVER
19KHz
DECODER
DRIVER
19KHz
5
1.3V
LCH
9
7
0.27V
680
R125
C142 0.47/50
R130 12K
5.6K
R128
0.012
C140
3900PF
C145
3900PF
C144
4.7K
R132
C141 0.47/50
R129 12K
5.6K
R127
0.012
C139
3900PF
C143
4.7K
R131
C SWITCH C.B
3.2V
STEREO
R126
4.7K
S7
MONO
FM STEREO
MONO
3.2V
FM STEREO
IND
D104.TLR124
3 5.6μH
1dB
J3 PHONES
4 5.6μH
C75 0.001
L5
5.6μH
1.85V
OPERATE
IND
S2-3
R84 1.2K
D8
TLR226
S2-4
B JACK C.B
J4 DC-4.5V
BATT
C69
470/6.3
S6
AF SWITCH ADJ.

NOTES:

1) ▬ B (+) power supply

2) ➡ Signal path

⇨ Rec path, AM signal path.

3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals.

But (   ) is with recording.

An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

4) Resistors with no designation have a rated power of $^1/_8$W and a tolerance of ±10%

5) Capacitors with no designation have a dielectric strength of less than 50WV.

6) The only capacitor tolerances indicated are ±5% (J) and ±10% (K).

7) Ceramic capacitor symbols:

For temperature compensation (SL)

High dielectric constant system (YY)

High dielectric constant system (YW, YP, YZ)

Semiconductor ceramic

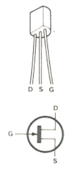
8) Explanation of symbols

(PP) Polypropylene film capacitor

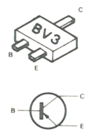
(T) Tantalum capacitor

▨ **Chip parts**

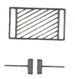
- This schematic diagram is subject to change without notice in the interests of improved performance.

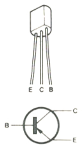


2SK212

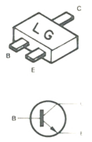


2SB624

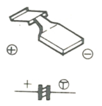

Chip capacitor



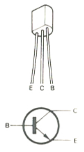
2SA1015
2SA1115



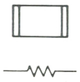
2SC2712



Chip tantalum capacitor



2SC1815
2SC1923
2SC2458
(2SC2785)


Chip resistor

S1-1,2	REC/PB (REC)
S2-1,2,3,4	FUNCTION SW: TAPE
S3-1,2	METAL SW: LH AUX
S4	PAUSE SW: OFF
S5	FF/REW SW: OFF
S6	PLAY SW: OFF
S7	FM STEREO-MONO SW: STEREO
S8	ANT SW: HEAD PHONE ANT

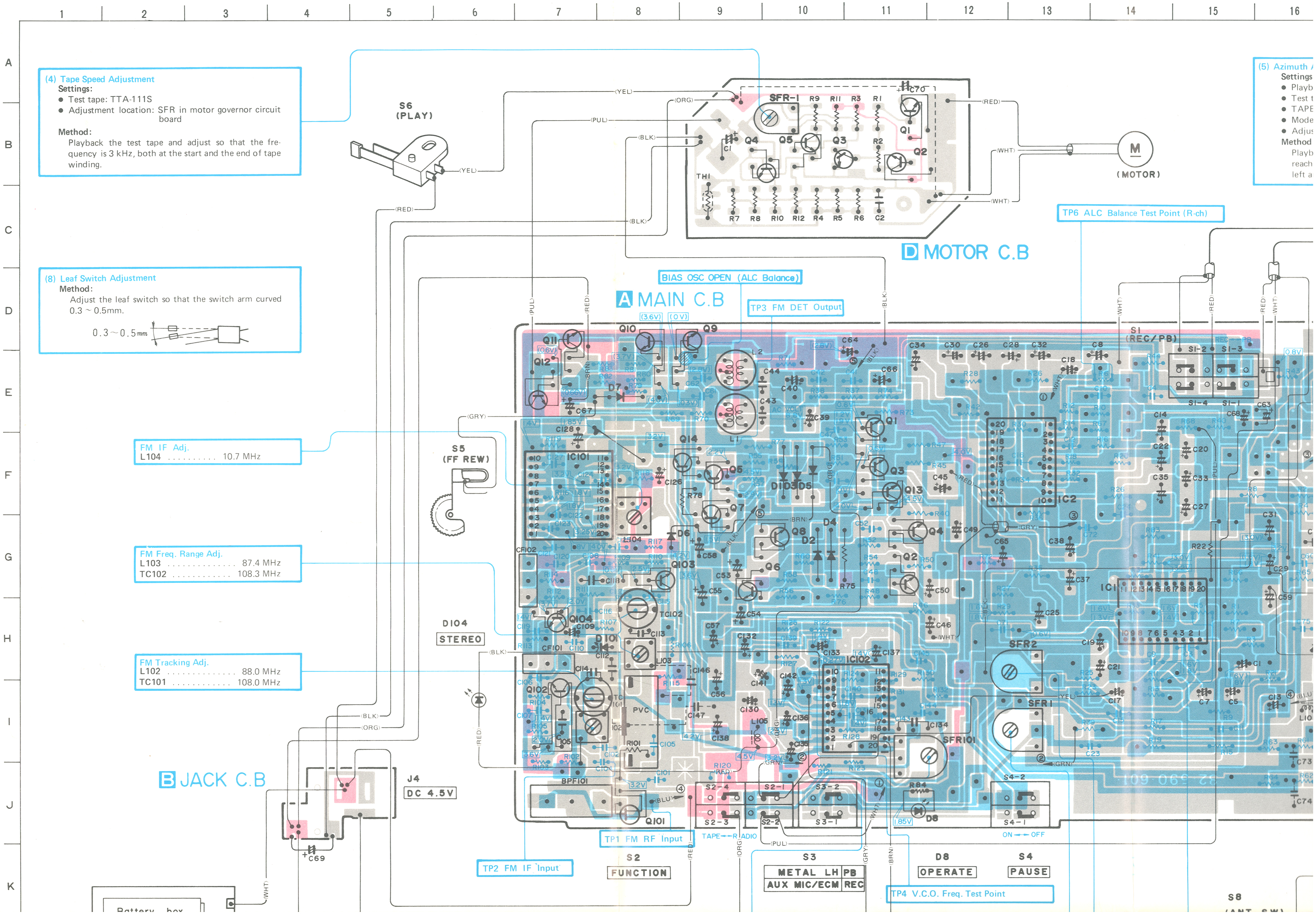
ELECTRICAL MAIN PARTS LIST

Symbol No.	Part No.	Description
≪MAIN CIRCUIT BOARD SECTION≫		
PCB-A	82-590-601-21	Main circuit board
< Tuner section >		
IC101	87-027-748-01	IC, KB4454
IC102	87-027-763-01	IC, TK10280
Q101	89-502-124-01	FET, 2SK212 (D)
Q102,103,104	89-319-233-01	Transistor, 2SC1923 (O)
D101	87-017-004-01	Diode, SD117
D104	87-027-262-01	LED, TLR124
L101	87-003-063-01	Coil, 0.22μH
L102,103	87-006-055-01	FM RF coil, FM OSC coil
L104	82-590-603-01	Quad coil, DET 5SH
L105	87-003-062-01	Choke coil, 1mH
VC101,102	87-011-125-01	PVC
TC101,102	87-011-124-01	Trimmer, 6pF
BPF101	87-030-082-01	Band pass filter
CF101,102	87-008-229-01	Ceramic filter MA5U
SFR101	87-021-643-01	Semi-fixed resistor, 4.7kΩ-B
		< Resistors >
R115	88-129-470-01	47Ω Chip resistor
R121	88-129-680-01	68Ω Chip resistor
R117	88-129-820-01	82Ω Chip resistor
R102	88-129-101-01	100Ω Chip resistor
R105,114,116	88-129-331-01	330Ω Chip resistor
R120	88-129-471-01	470Ω Chip resistor
R111	88-129-561-01	560Ω Chip resistor
R124,125	88-129-681-01	680Ω Chip resistor
R104,109,113, 120,122	88-129-102-01	1kΩ Chip resistor
R118	88-129-392-01	3.9kΩ Chip resistor
R131,132	88-129-472-01	4.7kΩ Chip resistor
R119,127,128	88-129-562-01	5.6kΩ Chip resistor
R123	88-129-103-01	10kΩ Chip resistor
R129,130	88-129-123-01	12kΩ Chip resistor
R107,108	88-129-473-01	47kΩ Chip resistor
R110	88-129-563-01	56kΩ Chip resistor
R106,112	88-129-104-01	100kΩ Chip resistor
R103	88-129-124-01	120kΩ Chip resistor
		< Capacitors >
C134	87-014-057-01	1000pF PP
C133	87-015-376-01	1μF 10V Tantalum
C114,124	87-015-880-01	2pF Chip capacitor
C104	87-015-746-01	5pF Chip capacitor
C105,112	87-015-748-01	7pF Chip capacitor
C115	87-015-879-01	10pF Chip capacitor
C116	87-015-753-01	15pF Chip capacitor
C103	87-015-754-01	18pF Chip capacitor
C117	87-015-759-01	39pF Chip capacitor
C127	87-015-765-01	120pF Chip capacitor
C143,144,145	87-015-824-01	3900pF Chip capacitor
C102,106,107, 108,110,111, 119,120,121, 122,123,125,	87-015-819-01	0.01μF Chip capacitor
C139,140	87-015-882-01	0.012μF Chip capacitor
C131	87-015-883-01	0.022μF Chip capacitor
< Audio section >		
IC1,2	87-027-745-01	IC, μPC1217G
Q1,2,3,4	89-324-585-01	Transistor, 2SC2458 (GR)
(Q1,2,3,4)		
Q5,6	89-318-154-01	Transistor, 2SC1815 (Y)
Q7,8	89-110-154-01	Transistor, 2SA1015 (Y)
Q9,10,11, 12,14	89-324-584-01	Transistor, 2SC2458 (Y)
(Q9,10,11, 12,14)	89-327-852-01	Transistor, 2SC2758 (J)
Q13	89-111-154-01	Transistor, 2SA1115 (E)
D1,2,3,4, 5,6,7	87-027-097-01	Diode, 1S1555
D8	87-027-636-01	LED, TLR226
L1,2	82-641-612-01	Bias, OSC coil
L3,4,5	87-003-061-01	Choke coil, 5.6μH
J1,2	87-032-978-01	Jack, 3.5φ (MIC/AUX)
J3	87-049-012-01	Jack, 3.5φ (PHONES)
S1	87-031-593-01	Slide switch (REC/PB)
S2	87-031-629-01	Slide switch (RADIO/TAPE)
S3,4	87-031-595-01	Slide switch (LH/AUX, PAUSE)
VR1	82-641-603-11	Volume, 20kΩ-A (VOLUME)
VR2	87-021-640-01	Volume, 100kΩ-B (BALANCE)
SFR1	87-021-673-01	Semi-fixed resistor, 1kΩ-B
SFR2	87-021-674-01	Semi-fixed resistor, 30kΩ-B
		< Resistors >
R61,62	88-129-279-01	2.7Ω Chip resistor
R5,6,49,50	88-129-100-01	10Ω Chip resistor
R7,8	88-129-120-01	12Ω Chip resistor
R59,60	88-129-150-01	15Ω Chip resistor
R83	88-129-220-01	22Ω Chip resistor
R72	88-129-680-01	68Ω Chip resistor
R55,56,71	88-129-101-01	100Ω Chip resistor
R31,32	88-129-151-01	150Ω Chip resistor
R77	88-129-181-01	180Ω Chip resistor
R57,58	88-129-221-01	220Ω Chip resistor
R67	88-129-271-01	270Ω Chip resistor
R63,64	88-129-471-01	470Ω Chip resistor
R17,18,19, 20	88-129-561-01	560Ω Chip resistor
R24,25,69	88-129-681-01	680Ω Chip resistor
R9,10,15,16, 76	88-129-102-01	1kΩ Chip resistor
R3,4	88-129-152-01	1.5kΩ Chip resistor
R53,54,66	88-129-222-01	2.2kΩ Chip resistor
R1,2	88-129-332-01	3.3kΩ Chip resistor
R65	88-129-392-01	3.9kΩ Chip resistor
R39,40,43, 44	88-129-472-01	4.7kΩ Chip resistor
R47,48	88-129-562-01	5.6kΩ Chip resistor
R68	88-129-103-01	10kΩ Chip resistor
R37,38,73, 79,80,82	88-129-123-01	12kΩ Chip resistor
R27,28,33 34	88-129-183-01	18kΩ Chip resistor
R70	88-129-223-01	22kΩ Chip resistor
R11,12	88-129-273-01	27kΩ Chip resistor
R23,24,35, 36	88-129-333-01	33kΩ Chip resistor
R81	88-129-393-01	39kΩ Chip resistor
R29,30	88-129-473-01	47kΩ Chip resistor
R74	88-129-104-01	100kΩ Chip resistor
R13,14	88-129-184-01	180kΩ Chip resistor
R25,26,41, 42,51,52	88-129-224-01	220kΩ Chip resistor
R21	88-129-105-01	1MΩ Chip resistor
R45,46,84	88-129-225-01	2.2MΩ Chip resistor
		< Capacitors >
C64	87-015-843-01	10μF 6.3V Tantalum
C51,53	87-015-766-01	150pF Chip capacitor
C47,48	87-015-770-01	330pF Chip capacitor
C15,16,75	87-015-776-01	0.001μF Chip capacitor
C9,10	87-015-826-01	0.0012μF Chip capacitor
C23,24,62	87-015-825-01	0.0015μF Chip capacitor
C3,4	87-015-817-01	0.0022μF Chip capacitor
C41,42	87-015-824-01	0.0039μF Chip capacitor
C61	87-015-819-01	0.01μF Chip capacitor
C60	87-015-883-01	0.022μF Chip capacitor
C11,12	87-015-834-01	0.033μF Chip capacitor
≪JACK CIRCUIT BOARD SECTION≫		
PCB-B	82-590-602-01	Jack circuit board
J4	87-049-048-01	DC jack
≪SWITCH CIRCUIT BOARD SECTION≫		
PCB-C	82-590-610-01	Switch circuit board
S7	87-031-632-01	Slide switch (STEREO/MONO)
≪MISCELLANEOUS≫		
RPH	87-046-193-01	REC/PB head
EH	82-424-625-01	Erase head
M·PCB-D	86-636-810-01	Motor, 17CL-1608 W/Motor circuit board
J5	82-590-241-01	Antenna jack ass'y (EXT·ANT TERMINAL)
S5	82-641-604-01	Leaf switch (FF/REW)
S6	87-031-548-01	Leaf switch (PLAY)
ECM	87-049-019-01	ECM

WIRING—1

NOTES (1) 🟥 B(+) Pattern 🟦 Component side pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.


1
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11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
K
S6 (PLAY)
SFR-1
D MOTOR C.B
M
(MOTOR)
BIAS OSC OPEN (ALC Balance)
A MAIN C.B
TP3 FM DET Output
TP6 ALC Balance Test Point (R-ch)
S1 (REC/PB)
S5 (FF REW)
D104
STEREO
IC1
IC2
IC101
IC102
SFR2
SFR1
SFR101
PVC
BPF101
Q101
B JACK C.B
J4
DC 4.5V
TP1 FM RF Input
TP2 FM IF Input
S2
FUNCTION
TAPE←→RADIO
S3
METAL LH PB
AUX MIC/ECM REC
D8
OPERATE
S4
PAUSE
ON ←→ OFF
TP4 V.C.O. Freq. Test Point
S8
Battery box

(4) Tape Speed Adjustment

Settings:

- Test tape: TTA-111S
- Adjustment location: SFR in motor governor circuit board

Method:

Playback the test tape and adjust so that the frequency is 3 kHz, both at the start and the end of tape winding.

(8) Leaf Switch Adjustment

Method:

Adjust the leaf switch so that the switch arm curved 0.3 ~ 0.5mm.

0.3 ~ 0.5mm

FM IF Adj.

L104	10.7 MHz

FM Freq. Range Adj.

L103	87.4 MHz
TC102	108.3 MHz

FM Tracking Adj.

L102	88.0 MHz
TC101	108.0 MHz

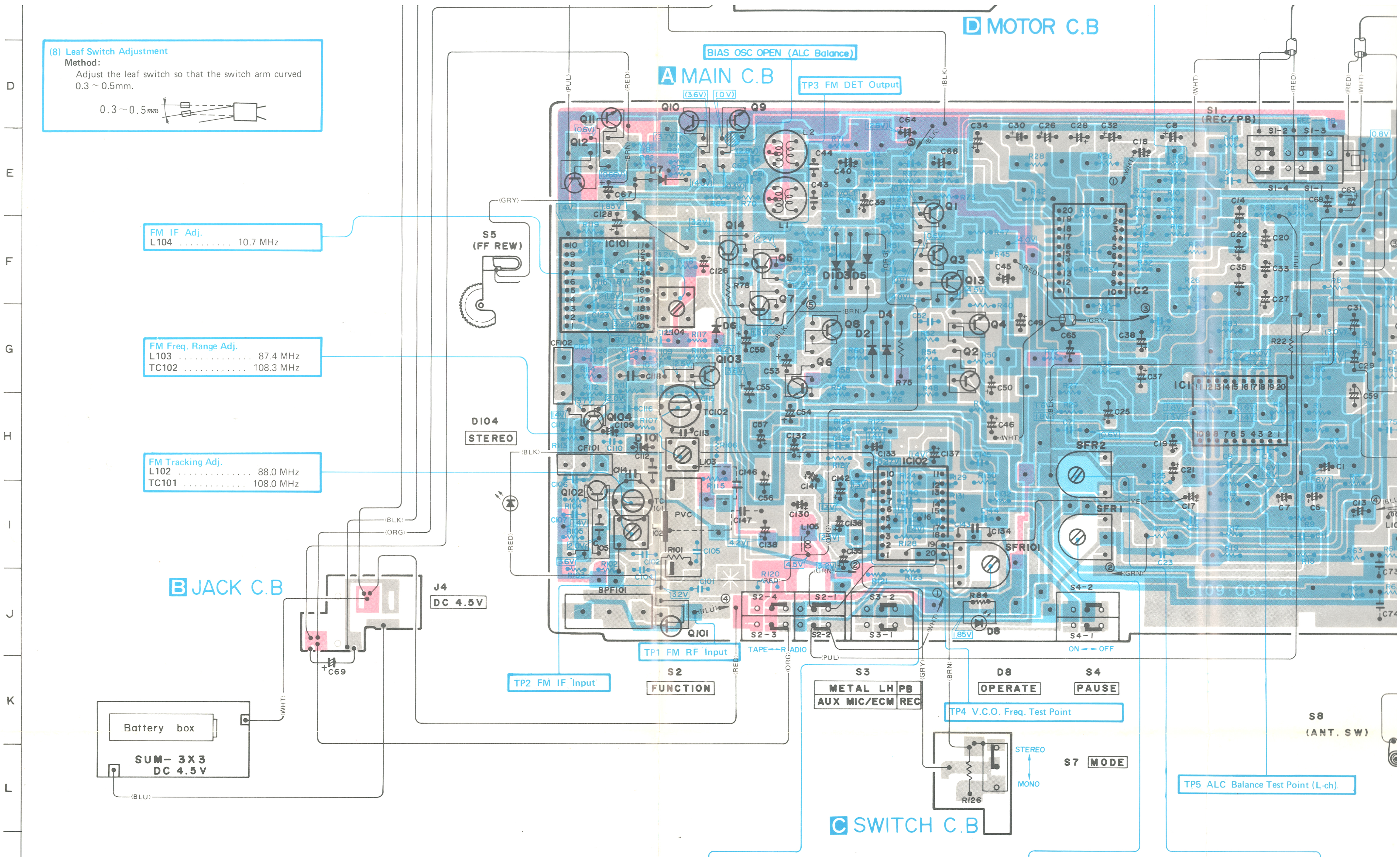
(5) Azimuth A

Settings

- Playb
- Test t
- TAPE
- Mode
- Adjus

Method

Playb reach left a


D
E
F
G
H
I
J
K
L
M
D MOTOR C.B
A MAIN C.B
B JACK C.B
C SWITCH C.B
0.3~0.5mm
S5
(FF REW)
D104
STEREO
J4
DC 4.5V
Battery box
SUM- 3X3
DC 4.5V
S1
(REC/PB)
IC101
IC102
IC1
IC2
SFR1
SFR2
SFR101
PVC
S2
FUNCTION
TAPE←→RADIO
S3
METAL LH PB
AUX MIC/ECM REC
D8
OPERATE
S4
PAUSE
ON←→OFF
S7 MODE
STEREO
MONO
S8
(ANT. SW)
(GRY)
(BLK)
(ORG)
(RED)
(PUL)
(WHT)
(BLU)
(BRN)
(GRN)
(YEL)

(8) Leaf Switch Adjustment

Method:

Adjust the leaf switch so that the switch arm curved 0.3 ~ 0.5mm.

BIAS OSC OPEN (ALC Balance)

TP3 FM DET Output

FM IF Adj.

L104 .... 10.7 MHz

FM Freq. Range Adj.

L103 .... 87.4 MHz

TC102 .... 108.3 MHz

FM Tracking Adj.

L102 .... 88.0 MHz

TC101 .... 108.0 MHz

TP1 FM RF Input

TP2 FM IF Input

TP4 V.C.O. Freq. Test Point

TP5 ALC Balance Test Point (L-ch)

(3) V.C.O. Freq. Adjustment

Settings:

- Test point: TP4
- Adjustment location: SFR101

Method:

Pin (3) (Input pin) of IC102 is cut.

Adjust SFR101 so that the frequency become 19 kHz ± 20 Hz.

(6) Playback Balance Adjustment

Settings:

- Test tape: TTA-112A
- MODE switch: TAPE
- Output level: Output volume, point 4
- Adjustment locations: SFR1

Method:

Adjust SFR1 so that the level becomes the same for both left and right channels.

(7) ALC Balance Adjustment

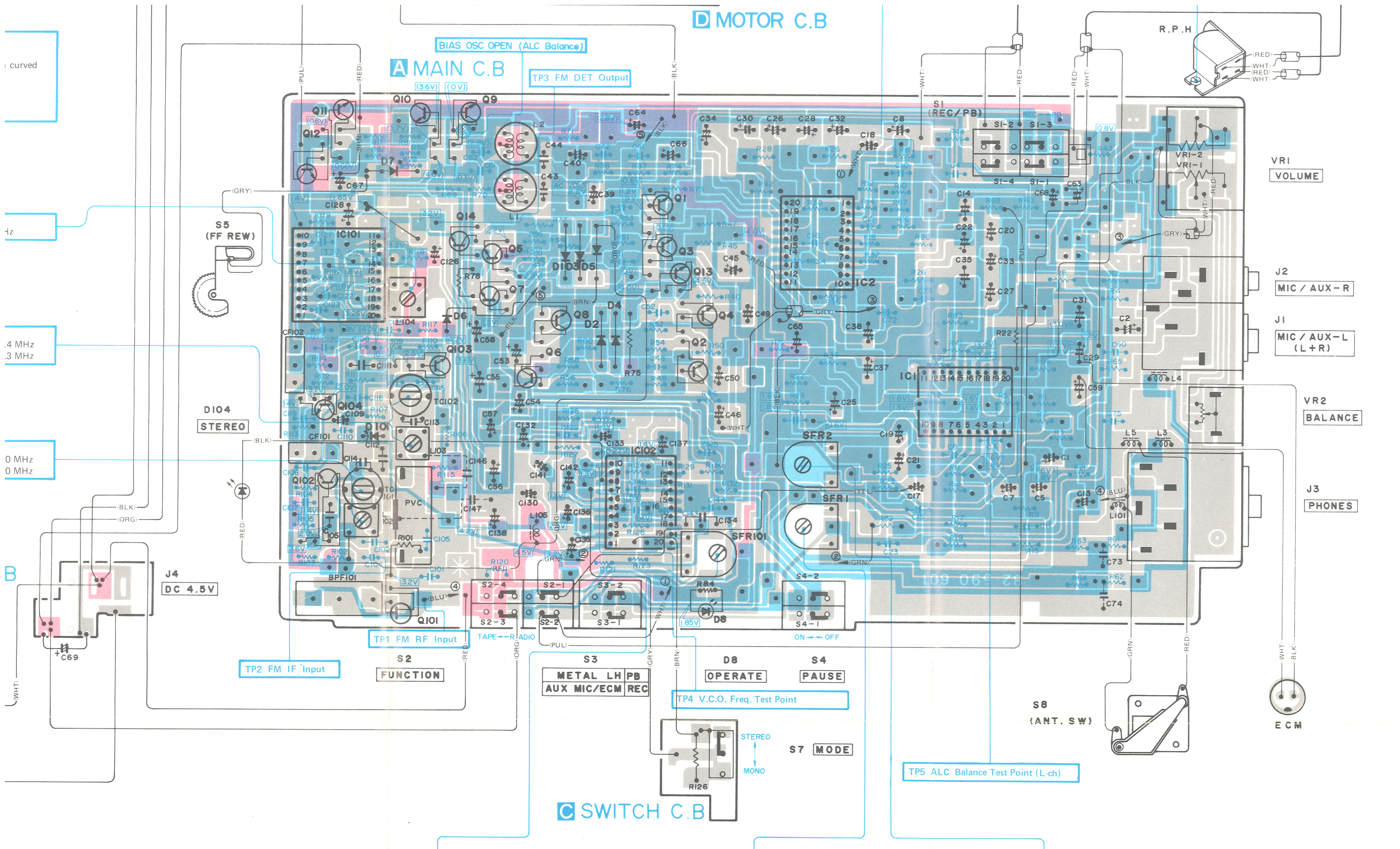
Settings:

- Input signal: MIC, –50 dB
- Test point: TP5 (L-ch), TP6 (R-ch)
- Adjustment location: SFR2

Method:

Adjust SFR2 so that the level bec

both left and right channels.


D MOTOR C.B
A MAIN C.B
C SWITCH C.B
BIAS OSC OPEN (ALC Balance)
TP3 FM DET Output
TP1 FM RF Input
TP2 FM IF Input
TP4 V.C.O. Freq. Test Point
TP5 ALC Balance Test Point (L-ch)
R.P.H
S1 (REC/PB)
VR1
VOLUME
VR2
BALANCE
J2
MIC / AUX-R
J1
MIC / AUX-L (L+R)
J3
PHONES
J4
DC 4.5V
S5 (FF REW)
D104
STEREO
S2
FUNCTION
TAPE ←→ RADIO
S3
METAL LH PB
AUX MIC/ECM REC
D8
OPERATE
S4
PAUSE
ON ←→ OFF
S7 MODE
STEREO
MONO
S8
(ANT. SW)
ECM
IC1
IC2
IC101
IC102
SFR1
SFR2
SFR101
PVC
curved
4 MHz
3 MHz
0 MHz
0 MHz
Hz

(3) V.C.O. Freq. Adjustment

Settings:

- Test point: TP4
- Adjustment location: SFR101

Method:

Pin (3) (Input pin) of IC102 is cut.
Adjust SFR101 so that the frequency become 19 kHz ± 20 Hz.

(6) Playback Balance Adjustment

Settings:

- Test tape: TTA-112A
- MODE switch: TAPE
- Output level: Output volume, point 4
- Adjustment locations: SFR1

Method:

Adjust SFR1 so that the level becomes the same for both left and right channels.

(7) ALC Balance Adjustment

Settings:

- Input signal: MIC, −50 dB
- Test point: TP5 (L-ch), TP6 (R-ch)
- Adjustment location: SFR2

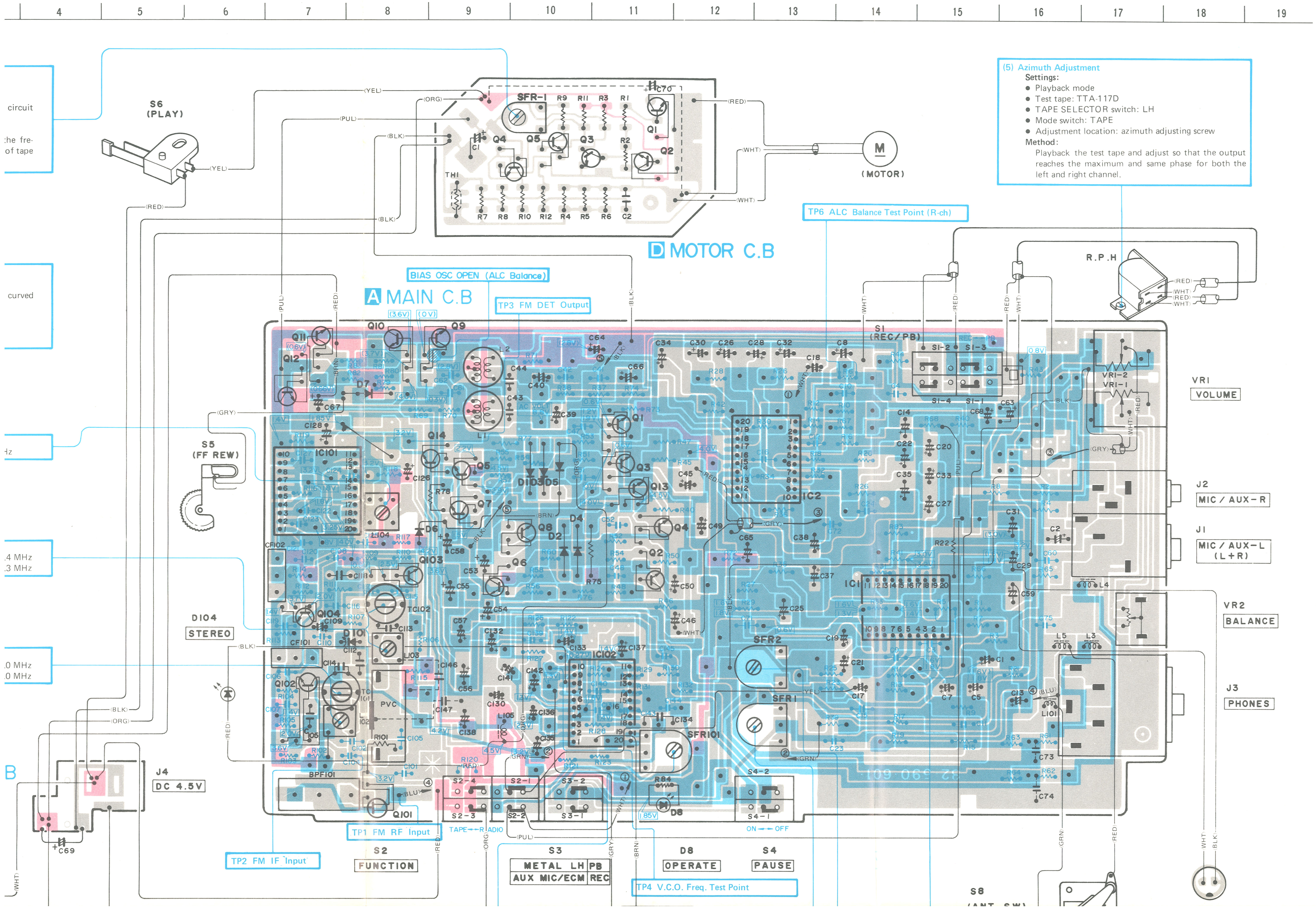
Method:

Adjust SFR2 so that the level becomes ±0.5 dB for both left and right channels.

B(+) Pattern 🟦 Component side pattern ▨ Others pattern

voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.

sterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.


4
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circuit
the fre-
of tape
curved
Hz
4 MHz
3 MHz
0 MHz
0 MHz
S6
(PLAY)
(YEL)
(ORG)
(PUL)
(BLK)
(RED)
(WHT)
SFR-1
Q1
Q2
Q3
Q4
Q5
C70
TH1
R7 R8 R10 R12 R4 R5 R6 C2
M
(MOTOR)
D MOTOR C.B
BIAS OSC OPEN (ALC Balance)
A MAIN C.B
TP3 FM DET Output
TP6 ALC Balance Test Point (R-ch)
R.P.H
S1
(REC/PB)
S1-2
S1-3
S1-4
S1-1
VR1-2
VR1-1
VR1
VOLUME
IC101
IC102
IC1
IC2
SFR1
SFR2
SFR101
J2
MIC / AUX-R
J1
MIC / AUX-L
(L+R)
VR2
BALANCE
J3
PHONES
S5
(FF REW)
D104
STEREO
J4
DC 4.5V
TP1 FM RF Input
TP2 FM IF Input
S2
FUNCTION
TAPE←→RADIO
S3
METAL LH PB
AUX MIC/ECM REC
D8
OPERATE
S4
PAUSE
ON←→OFF
TP4 V.C.O. Freq. Test Point
S8
(ANT SW)

(5) Azimuth Adjustment

Settings:

- Playback mode
- Test tape: TTA-117D
- TAPE SELECTOR switch: LH
- Mode switch: TAPE
- Adjustment location: azimuth adjusting screw

Method:

Playback the test tape and adjust so that the output reaches the maximum and same phase for both the left and right channel.